REMARKS

Claims 2-7, 9-13, 15-17, 21-29 are pending in this application. Claims 1, 8, 14 and 18-20 have been canceled without prejudice or disclaimer of the subject matter claimed therein. Claims 2, 3, 5, 6, 7, 9, 10-12, 15-17, 21 and 22 have been amended. Claims 23-29 have been added.

All Claims Comply With 35 U.S.C. § 112, Second Paragraph

In the Office Action, at page 2, Claim 22 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicant respectfully requests reconsideration of this rejection.

Applicant and the undersigned have carefully reviewed the Office Action, the remarks therein concerning the clarity of the claims, and all of the pending claims. Applicant has attempted to specifically address each of the comments in the Office Action concerning the claims' clarity, and respectfully submits that all of the pending claims fully comply with 35 U.S.C. § 112, second paragraph. Applicant therefore respectfully requests withdrawal of the rejection of the claims.

All Claims Define Allowable Subject Matter

In the Office Action, at pages 2-3, Claims 14 and 16 were rejected under 35 U.S.C. § 102(e) as reciting subject matter allegedly anticipated by U.S. Patent No. 6,253,554, issued to *Kobayashi et al.* The rejection of Claim 14 has been rendered moot by the cancellation of Claim 14. Claim 16 now depends from any one of new independent Claims 26-28. Applicant respectfully requests reconsideration of this rejection.

Independent Claims 24-29 provide for methods or apparatus directed to a gas turbine system wherein compressed air is removed from a compressor and is fed as cooling air into internal cooling channels of thermally loaded components of the gas turbine system, with a small part of the cooling air being leaked from the components through film cooling openings, and the remaining air is at least cooled down after the cooling process within the thermally loaded components and fed back to the compressor. Independent method Claims

24 and 25 further include compressing the cooling air that has been cooled after exiting from the internal cooling channels through the thermally loaded components. The cooling air is cooled after having passed through the thermally loaded components and then compressed, and added to the compressor end air. Independent apparatus Claims 26-28 are directed to novel combinations of features including second cooling lines from the thermally loaded components back to the compressor and/or the outlet of the compressor, wherein recooling of the air may alternatively be done by means of a cooler, as claimed in Claim 26, a water injection device, as claimed in Claim 27, or a heat exchanger, as claimed in Claim 28. In addition to providing a cooler in the second cooling lines, independent Claim 29 also includes an external compressor located in the second cooling lines downstream of the cooler. Applicant respectfully submits that *Kobayashi et al.* neither discloses nor suggests a gas turbine system wherein the cooling air is recooled after it has cooled the respective thermally loaded components of the system and before it is fed back to the compressor.

For at least the foregoing reasons, Applicant respectfully submits that the prior art fails to identically disclose or describe the subject matter recited in each of independent Claims 26-28, and hence dependent Claims 15-17 and 21-23. Accordingly, Applicant respectfully submits that *Kobayashi et al.* fails to anticipate any of Claims 15-17, 21-23 and 26-28, and therefore respectfully requests withdrawal of the rejection thereof.

In the Office Action, at pages 3-7, Claims 1-8 and 10-21 were rejected under 35 U.S.C. § 103(a) as reciting subject matter which is allegedly obvious, and therefore allegedly unpatentable, over International Patent Publication No. WO 98/13584, issued to *Gross*, in view of U.S. Patent No. 6,065,282, issued to *Fukue et al.* Claims 9 and 22 were rejected as being unpatentable over WO 98/13584, in view of *Fukue et al.*, and further in view of U.S. Patent No. 5,581,996, issued to *Koch et al.* Claims 1-22 were rejected as being unpatentable over *Kobayashi et al.*, in view of *Fukue et al.* and *Koch et al.* Applicant respectfully requests reconsideration of these rejections.

Independent Claims 24, 25 and 29, and hence dependent Claims 2-7, and 9-13 are all directed to a method or apparatus for cooling a gas turbine system wherein compressed air is removed from a compressor, is fed as cooling air for cooling inside an internal cooling

channel through thermally loaded components, and is then recooled and compressed before being added back to the compressor. Applicant respectfully submits that none of the applied references disclose or suggest, whether taken alone or in combination, recooling of the cooling air after it has cooled the respective thermally loaded components of this system and before it is fed back to the compressor. The Office Action refers to *Fukue et al.* for an alleged disclosure of an alternative embodiment that cools the cooling air in a heat exchanger 3 prior to compression in 4 (shown in Fig. 1). Applicant respectfully submits that this is a misinterpretation of the embodiment shown in Fig. 1 of *Fukue et al.* As explained in *Fukue et al.*, at column 4, cooling air that has passed through the stationary blades 20 within the gas turbine casing is removed to the outside of the gas turbine casing through a pipe 2, cooled in an air cooler 3, and then pressurized by a booster pump 4 before being circulated again in the gas turbine casing. Thus, the flow of the cooling air circulates in a completely closed circuit to cool the stationary blades 20 and moving blades 21, while the cooling air only needs to be replenished from a makeup line 11, which leads from the compressor, at the make-up time. Therefore, Applicant respectfully submits that *Fukue et al.* clearly does not disclose or suggest the Applicant's claimed invention of recooling the cooling air after it has cooled the respective components of the system and before it is fed back to the compressor, which supplies compressed air both to the combustor as well as for cooling inside the internal cooling channels through the thermally loaded components. Applicant further submits that none of the other applied references disclose or suggest the above-described novel combination of features.

For at least the foregoing reasons, Applicant respectfully submits that Claims 2-7, 9-13, 15-17, and 21-29, each taken as a whole, patentably define over the prior art. Applicant therefore respectfully requests withdrawal of the rejections of the claims under 35 U.S.C. § 103(a).

For at least the foregoing reasons, Applicant respectfully submits that Claims 2-7, 9-13, 15-17 and 21-29 are in condition for allowance.

Conclusion

For at least the foregoing reasons, Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Kim believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, the Examiner is invited to call Applicant's representative at the number below.

Respectfully submitted,

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VERSION OF CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

2. **(Amended)** Method as claimed in Claim ~~[1]~~ **24**, wherein the thermally loaded components include the walls of the combustor and/or walls of the transition pieces and/or housing parts of the turbine and/or rotor parts of the turbine and/or blades of the turbine.

3. **(Amended)** Method as claimed in Claim 2, wherein the blades of the turbine are cooled with the cooling air, and ~~[that]~~ the drilled film cooling openings are located on the leading blade edges and/or the trailing blade edges.

5. **(Amended)** Method as claimed in Claim ~~[1]~~ **24**, wherein the compressor of the gas turbine system itself is used for compressing the cooling air after the cooling process.

6. **(Amended)** Method as claimed in Claim ~~[1]~~ **24**, wherein an external compressor is used to compress the cooling air after the cooling process.

7. **(Amended)** Method as claimed in Claim 6, wherein the cooling air is compressed by the external compressor to the pressure of the compressor end air, and ~~[that]~~ the compressed cooling air is added directly to the compressor end air.

9. **(Amended)** Method as claimed in Claim ~~[1]~~ **24**, wherein the cooling air is cooled after removal from the compressor to a lower temperature before it is used for the cooling of thermally loaded components.

10. **(Amended)** Method as claimed in Claim ~~[8]~~ **24**, wherein a cooler is used to cool the cooling air.

11. **(Amended)** Method as claimed in Claim ~~[8]~~ **24**, wherein water is injected directly into the cooling air in order to cool the cooling air.

12. **(Amended)** Method as claimed in Claim ~~[8]~~ **24**, wherein the cooling air is cooled with the compressor end air by using a heat exchanger.

15. **(Amended)** Apparatus for cooling a gas turbine system as claimed in ~~[Claim 14,]~~ **any one of Claims 26, 27 and 28** wherein the cooled components include blades of the turbine, and ~~[that]~~ the drilled film cooling openings are located on the leading blade edges and/or the trailing blade edges.

16. **(Amended)** Apparatus for cooling a gas turbine system as claimed in ~~[Claim 14]~~ **any one of Claims 26, 27 and 28**, wherein the second cooling lines merge into the compressor at an intermediate pressure level.

17. **(Amended)** Apparatus for cooling a gas turbine system as claimed in ~~[Claim 14]~~ **any one of Claims 26, 27 and 28**, wherein an external compressor is located in the second cooling lines, and ~~[that]~~ the second cooling lines merge into the outlet of the compressor of the gas turbine system.

21. **(Amended)** Apparatus for cooling a gas turbine system as claimed in Claim ~~[20]~~ **28**, wherein a cooler operated with a different cooling medium is located downstream from the heat exchanger.

22. **(Amended)** Apparatus for cooling a gas turbine system as claimed in ~~[Claim 14]~~ **any one of Claims 26, 27 and 28**, wherein means for cooling the cooling air~~[, in particular in the form of a cooler]~~ are located in the first cooling lines.